

WHAT IS CLAIMED IS:

1. An osteosynthesis clip for the cicatrization of bone tissue fragments, the clip comprising:
at least two engagement legs extending approximately parallel to one another and including respective distal bridging tips and respective proximal insertion tips to be inserted into the bone tissue fragments; and
a connecting bridge coupled to the distal bridging tips of the two engagement legs, the connecting bridge including at least two elongated sections extending along side one another, the elongated sections extending along a non-linear trajectory to form a non-linear deformable region.
2. The osteosynthesis clip of claim 1, wherein the non-linear deformable region includes one of a depression and a dome.
3. The osteosynthesis clip of claim 1, wherein the two elongated sections include respective bulges that together form a space of separation between elongated sections.
4. The osteosynthesis clip of claim 1, wherein the engagement legs are provided with gripping surfaces for frictionally engaging the bone tissue fragments.
5. The osteosynthesis clip of claim 1, wherein the engagement legs and the connecting bridge are constructed from a biocompatible material.
6. The osteosynthesis clip of claim 1, wherein the elongated sections include respective stepped-up sections to permit the setting of bone fragments having varying diameters.
7. A method for inserting an osteosynthesis clip into bone tissue fragments, the clip including at least two engagement legs extending approximately parallel to one another and including respective distal bridging tips and respective proximal insertion tips; and a connecting bridge

coupled to the distal bridging tips of the two engagement legs, the connecting bridge including at least two elongated sections extending along side one another, the elongated sections extending along a non-linear trajectory to form a non-linear deformable region, the method comprising:

pre-drilling the bone tissue fragments with respective clip reception holes to respectively receiving the engagement legs of the osteosynthesis clip;

inserting the clip into the bone tissue fragments;

separating the elongated sections of the clip to cause the engagement legs of the clip to approach one another and to cause the bone tissue fragments to come in contact with one another under pressure; and

applying a force to the elongated sections of the clip in an area of the non-linear deformable region to cause the proximal insertion tips to pivot toward one another about the distal bridging tips of the clip.

8. The method of claim 7, wherein the clip is inserted into the bone tissue fragments by a percussion force applied to an instrument coupled to the clip.

9. The method of claim 7, further comprising:

bringing the elongated sections closer together if the bone tissue fragments come in contact with one another under too high a pressure.

10. The method of claim 7, wherein the force applied to the elongated sections is an upward force, the method further comprising: applying a downward force on the distal bridging tips of the clip while the upward force is applied to the elongated sections of the clip.

11. An insertion tool to insert an osteosynthesis clip into bone tissue fragments, the clip including at least two engagement legs extending approximately parallel to one another and including respective distal bridging tips and respective proximal insertion tips; and a connecting bridge coupled to the distal bridging tips of the two engagement legs, the connecting bridge including at least two elongated sections extending along side one another, the elongated sections

extending along a non-linear trajectory to form a non-linear deformable region, the insertion tool comprising:

an arrangement to separate the elongated sections of the clip; and

an arrangement to apply a force on the elongated sections of the clip in an area of the non-linear deformable region.

12. The insertion tool of claim 11, wherein the non-linear deformable region includes one of a depression and a dome.

13. The insertion tool of claim 11, wherein the arrangement to separate the elongated sections includes first and second handles, respective engagement arms coupled to the handles, respective engagement flanges coupled to the respective engagement arms to engage the elongated sections of the clip, pivot arms respectively and pivotally coupled to the handles, and a first biasing arrangement configured to bias the first and second handles into a normally opened position.

14. The insertion tool of claim 13, wherein the arrangement to apply the force on the elongated sections of the clip includes a spacing bolt, a guiding bolt coupled to pivot arms, a pair of pushing plates slidably coupled to guiding bolt, a third handle pivotally coupled to the pushing plates and to the second handle via a pivot pin, and a second biasing arrangement configured to bias the second and third handles into a normally opened position.

15. The insertion tool of claim 14, wherein at least one of the first and second biasing arrangements includes at least one of a pair of spring clips and a spring.

16. The insertion tool of claim 11, further comprising:

a ratchet arrangement configured to prevent first and second handles from separating from one another after a first squeezing force is applied to the first and second handles.

17. The insertion tool of claim 16, wherein the ratchet arrangement includes a connecting end coupled to one of the first and second handles, a ratchet clip with teeth coupled to the connecting end, and a third biasing arrangement configured to bias at least a portion of the ratchet clip toward the engagement arms.

18. The insertion tool of claim 11, further comprising:

a bolt retention arrangement to prevent the first and second handles from separating from one another after a first squeezing force is applied to the first and second handles.

19. A surgical system, comprising:

an osteosynthesis clip for the cicatrization of bone tissue fragments, the clip including at least two engagement legs extending approximately parallel to one another and including respective distal bridging tips and respective proximal insertion tips to be inserted into the bone tissue fragments; and a connecting bridge coupled to the distal bridging tips of the two engagement legs, the connecting bridge including at least two elongated sections extending along side one another, the elongated sections extending along a non-linear trajectory to form a non-linear deformable region; and

an insertion tool to insert the osteosynthesis clip into the bone tissue fragments, the insertion tool including an arrangement to separate the elongated sections of the clip; and an arrangement to apply a force on the elongated sections of the clip in an area of the non-linear deformable region.

20. The surgical system of claim 19, wherein the arrangement to separate the elongated sections includes first and second handles, respective engagement arms coupled to the handles, respective engagement flanges coupled to the respective engagement arms to engage the elongated sections of the clip, pivot arms respectively and pivotally coupled to the handles, and a first biasing arrangement configured to bias the first and second handles into a normally opened position, and the arrangement to apply the force on the elongated sections of the clip includes a spacing bolt, a guiding bolt coupled to pivot arms, a pair of pushing plates slidably coupled to guiding bolt, a

third handle pivotally coupled to the pushing plates and to the second handle via a pivot pin, and a second biasing arrangement configured to bias the second and third handles into a normally opened position.

21. An osteosynthesis clip for the cicatrization of bone tissue fragments, the clip comprising:

at least two engagement legs extending approximately parallel to one another and including respective distal bridging tips and respective proximal insertion tips to be inserted into the bone tissue fragments; and

a connecting bridge coupled to the distal bridging tips of the two engagement legs, the connecting bridge including at least one elongated section extending along a non-linear trajectory to form a non-linear deformable region.

22. The osteosynthesis clip of claim 21, wherein the non-linear deformable region includes one of a depression and a dome.

23. A method for inserting an osteosynthesis clip into bone tissue fragments, the clip including at least two engagement legs extending approximately parallel to one another and including respective distal bridging tips and respective proximal insertion tips; and a connecting bridge coupled to the distal bridging tips of the two engagement legs, the connecting bridge including at least one elongated section extending along a non-linear trajectory to form a non-linear deformable region, the method comprising:

pre-drilling the bone tissue fragments with respective clip reception holes to respectively receiving the engagement legs of the osteosynthesis clip;

inserting the clip into the bone tissue fragments; and

applying a force to the elongated sections of the clip in an area of the non-linear deformable region to cause the proximal insertion tips to pivot toward one another about the distal bridging tips of the clip.

24. The method of claim 23, wherein the non-linear deformable region includes one of a depression and a dome.
25. An insertion tool to insert an osteosynthesis clip into bone tissue fragments, the clip including at least two engagement legs extending approximately parallel to one another and including respective distal bridging tips and respective proximal insertion tips; and a connecting bridge coupled to the distal bridging tips of the two engagement legs, the connecting bridge including at least one elongated section extending along a non-linear trajectory to form a non-linear deformable region, the insertion tool comprising:
- an arrangement to apply a force on the elongated section of the clip in an area of the non-linear deformable region.
26. The insertion tool of claim 23, wherein the non-linear deformable region includes one of a depression and a dome.
27. The osteosynthesis clip of claim 1, wherein the engagement legs are provided with respective helical screw surfaces to facilitate removal of the clip after the bone tissue fragments have fused.
28. The osteosynthesis clip of claim 27, wherein the non-linear deformable region includes one of a depression and a dome.
29. The osteosynthesis clip of claim 27, wherein the two elongated sections include respective bulges that together form a space of separation between elongated sections.
30. The osteosynthesis clip of claim 27, wherein the engagement legs and the connecting bridge are constructed from a biocompatible material.

31. The osteosynthesis clip of claim 27, wherein the elongated sections include respective stepped-up sections to permit the setting of bone fragments having varying diameters.